

IN THE CLAIMS:

Please AMEND claims 12, 21, and 23; and

Please ADD claims 24-27 as follows:

1. (Previously Presented) A method, comprising:

authenticating a mobile node by an access router;

authorizing the mobile node to participate in a candidate access router discovery procedure;

maintaining, by the access router within a mobile internet protocol environment, a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and associated access points of the neighboring access routers, wherein access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas; and

populating the cache with a cache entry in response to a handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over,

wherein the cache entry is tagged with authentication information of the mobile node, and

wherein a total number of cache entries that can be tagged and thus introduced into the cache by the mobile node is limited.

2. (Cancelled)

3. (Previously Presented) The method according to claim 1, wherein the mobile node is authenticated by using at least one of an international mobile subscriber identity for cellular communication systems and a network access identifier for systems based on internet protocol.

4. (Previously Presented) The method according to claim 1, further comprising:

receiving a token within a message specific to the candidate access router discovery procedure from the mobile node by the access router as a selected handover candidate after a handover procedure of the mobile node between a previous access router and the access router, wherein the token is generated by the previous access router and is sent from the previous access router to the mobile node within a message comprising a list of candidate access routers; and

sending the token within a neighbor exchange between the access routers from the access router back to the previous access router for verification, wherein the access routers are configured to one of create and refresh cache entries concerning the respective other access router, the capabilities of the respective other access router, and the associated access point of the respective other access router.

5. (Previously Presented) The method according to claim 4, wherein the token is generated by maintaining by the previous access router a short list of random values used as keys to hash the identity of the mobile node, wherein each key in the short list is associated with an integer index that is passed along with the token, and wherein upon receiving the token for verification, the previous access router uses the integer index to lookup the associated key, hash the identity of the mobile node sent in the neighbor exchange, and compare the hash to the token.

6. (Previously Presented) The method according to claim 5, wherein with progressing time new keys are generated and added to the head of the list while old keys are expired and removed so that from the length of the list and the frequency of the generated new keys, the total amount of time the mobile node has been attached is determined.

7. (Previously Presented) A system, comprising:
a plurality of access routers within a mobile internet protocol environment, each of the access routers configured to authenticate a mobile node, to authorize the mobile node to participate in a candidate access router discovery procedure, and to maintain a cache of neighboring access routers as handover candidates, capabilities of the neighboring access

routers, and associated access points of the neighboring access routers, wherein the access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas; and

a plurality of mobile nodes, each of the mobile nodes configured to perform a handover action between the access routers,

wherein the cache is configured to be populated with a cache entry in response to the handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, and wherein the cache is further configured to tag the cache entry with authentication information of the handover action performing mobile node, and to limit a total number of entries that can be tagged and thus introduced into the cache by any given mobile node.

8-11. (Cancelled)

12. (Currently Amended) An apparatus, comprising:

a first controller configured to authenticate a mobile node;

a second controller configured to authorize the mobile node to participate in a candidate access router discovery procedure; and

a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and associated access points of the neighboring access

routers, wherein access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas;

wherein the cache is configured to be populated with a cache entry in response to a handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, and wherein the cache is further configured to tag the cache entry with authentication information of the handover action performing mobile node, and to limit a total number of entries that can be tagged and thus introduced into the cache by any given mobile node.

13. (Cancelled)

14. (Previously Presented) The apparatus according to claim 12, further comprising:

a receiver configured to receive a token within a message specific to the candidate access router discovery procedure from the mobile node after a handover procedure of the mobile node between a previous access router and the access router, wherein the previous access router is configured to generate the token and to send the token to the mobile node within a message comprising a list of candidate access routers; and

a transmitter configured to send the token within a neighbor exchange with the previous access router for verification, wherein a cache entry concerning the previous

access router, the capabilities of the previous access router, and the associated access point of the previous access router is one of created and refreshed, and wherein the previous access router comprises a verifier configured to verify the token.

15. (Previously Presented) The apparatus according to claim 14, wherein the previous access router comprises a first hashing unit configured to hash the identity of the mobile node by using random values out of a short list as keys, and an associating unit configured to associate each key in the list with an integer index, and

wherein the verifier comprises a lookup table for integer indices and the associated keys, a second hashing unit configured to hash the identity of the mobile node and a comparing unit configured to compare the hash to the token.

16. (Previously Presented) The apparatus according to claim 15, wherein the previous access router is configured to generate new keys with progressing time, to add the new keys to the head of the list, and to remove old keys.

17-20. (Cancelled)

21. (Currently Amended) The apparatus according to claim 16, ~~wherein~~further comprising: the previous access router comprises a determiner configured to determine a

total amount of time thea mobile node has been attached from the length of the list and the frequency of the generated new keys.

22. (Previously Presented) A computer program, embodied on a computer readable medium, for controlling a processor to implement a method, the method comprising:

authenticating a mobile node by an access router;

authorizing the mobile node to participate in a candidate access router discover procedure;

maintaining, by the access router within a mobile internet protocol environment, a cache of neighboring access routers as handover candidates, capabilities of the neighboring access routers, and associated access points of the neighboring access routers, wherein access routers are considered neighbors only if the access routers comprise access points with overlapping coverage areas; and

populating the cache with a cache entry in response to a handover action of the mobile node, wherein the cache entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, wherein the cache entry is tagged with authentication information of the mobile node, and wherein a total number of cache entries that can be tagged and thus introduced into the cache by the mobile node is limited.

23. (Currently Amended) An apparatus, comprising:

authentication means for authenticating a mobile node;

authorization means for authorizing the mobile node to participate in a candidate access router discovery procedure; and

caching means for storing neighboring access routers as handover candidates, capabilities of the neighboring access routers, and associated access points of the neighboring access routers, wherein access routers are considered neighbors only if they comprise access points with overlapping coverage areas;

wherein the caching means is configured to be populated with a caching means entry in response to a handover action of the mobile node, wherein the caching means entry concerns a neighboring access router, the capabilities of the neighboring access router, and an associated access point from which the mobile node is handed over, and wherein the caching means is further configured to tag the caching means entry with authentication information of the handover action performing mobile node, and to limit a total number of entries that can be tagged and thus introduced into the caching means by any given mobile node.

24. (New) The method according to claim 1, further comprising:

receiving a token within a message specific to the candidate access router discovery procedure from the mobile node by the access router as a selected handover candidate after a handover procedure of the mobile node between a previous access

router and the access router, wherein the token is generated by the previous access router and is sent from the previous access router to the mobile node within a message comprising a list of candidate access routers; and

receiving the token within a neighbor exchange between the access routers from the previous access router to the access router for verification, wherein the access routers are configured to one of create and refresh cache entries concerning the respective other access router, the capabilities of the respective other access router, and the associated access point of the respective other access router.

25. (New) The method according to claim 24,

wherein the token is generated by maintaining by the previous access router a short list of random values used as keys to hash the identity of the mobile node,

wherein each key in the short list is associated with an integer index that is passed along with the token, and

wherein upon receiving the token for verification, the access router uses the integer index to lookup the associated key, hash the identity of the mobile node sent in the neighbor exchange, and compare the hash to the token.

26. (New) The apparatus according to claim 12, further comprising:

a receiver configured to receive a token within a message specific to the candidate access router discovery procedure from the mobile node after a handover procedure of

the mobile node between a previous access router and the access router, wherein the previous access router is configured to generate the token and to send the token to the mobile node within a message comprising a list of candidate access routers,

wherein the receiver is configured to receive the token within a neighbor exchange with the previous access router for verification, and wherein a cache entry concerning the previous access router, the capabilities of the previous access router, and the associated access point of the previous access router is one of created and refreshed; and

a verifier configured to verify the token.

27. (New) The apparatus according to claim 26,

wherein the previous access router comprises a first hashing unit configured to hash the identity of the mobile node by using random values out of a short list as keys, and an associating unit configured to associate each key in the list with an integer index, and

wherein the verifier comprises a lookup table for integer indices and the associated keys, a second hashing unit configured to hash the identity of the mobile node and a comparing unit configured to compare the hash to the token.